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Sub G16

16. (FOUR TIMES AMENDED) A gas turbine engine compressor blade comprising:

a compressor blade metallic airfoil having pressure side, a suction side, a leading edge, and a trailing edge,

a first laser shock peened surface extending radially at least along a portion of one of said edges on a side of said airfoil extending radially along and chordwise from said one of said edges,

a second laser shock peened surface extending radially at least along a portion of the other one of said edges on a side of said airfoil extending radially along and chordwise from said other one of said edges, and

first and second regions having deep compressive residual stresses imparted by laser shock peening (LSP) extending into said airfoil from said first and second laser shock peened surfaces respectively along said leading and trailing edges of said airfoil wherein said deep compressive residual stresses are formed with focused laser beam spots, on [extend from] said laser shock peened surfaces, in a range between 100 and 200 joules per square centimeter [to a depth in a range of about 20-50 mils into said regions].

REMARKS

In response to the Office Action mailed June 8, 1998, the telephonic interview of September 14, 1998 as outlined in the Examiner's Interview Summary, Paper No. 25, and the Examiner's Advisory Action mailed October 28, 1998 (Paper No. 2), please consider the amendments above and the following remarks:

Claim Rejection - 35 USC §103(a)

1. The Examiner's rejection (in the parent case) of Claims 1-20 under 35 U.S.C. §103(a), as being unpatentable over Mannava 5,591,009, in view of Neal et al. 4,426,867, has been carefully considered by the Applicants and the Applicants respectfully disagree. The Applicants respectfully submit that the Mannava '009 patent is not available to the Examiner

as a "103" reference because the Mannava '009 patent was filed (January 17, 1995) after an Invention Disclosure entitled "Enhanced Compressor Blade for Aircraft Engines" signed by the Applicants was disclosed to the Applicants' employer and after the invention was reduced to practice. The Applicants have submitted several Declarations together with Exhibits proving that the Applicants conceived and reduced to practice the present invention prior to the effective or filing date of the Mannava '009 patent. The Examiner stated that the exhibits did not disclose the depth of laser shock peened compressive residual stresses. The Applicants have therefore amended the Claims to show the fluences of the laser beam spots used to impart the compressive residual stresses to those depths. The range of the laser beam fluences is between 100 and 200 joules per square centimeter as shown in the Exhibits. Therefore, the Applicants respectfully submit that the Examiner's rejection of Claims 1-20 under 35 U.S.C. §103(a), as being unpatentable over Mannava, in view of Neal, has been overcome by the remarks above and the attached 1.131(b) Declaration and should be withdrawn.

2. The Applicants respectfully submit that Claims 1-20 are now in condition for allowance based on the amendments and remarks above.

Respectfully submitted,

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